

Vidyanidhi - the evolving Indian Digital Library of Electronic Theses Initiative

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Context and background:

One of the fundamental ways of improving the quality of higher education is to facilitate and support the processes of creating, accessing, and using information/knowledge. The world of scholarship has changed dramatically in the last decade. Information and Communication Technologies (ICTs) are the catalysts of this change. The ICTs have given us the power to manage information more effectively and also the means to dissolve barriers and offer equity of access to knowledge and information. New technologies are forcing universities and academic institutions to rethink their strategic role concerning scholarship. Web publishing makes it possible for them to alter and strengthen their position in the process of creation and communication of academic research. Therefore universities have to reconsider the ways and practices in scholarly publishing. This means that they not only have to redefine their role in the process of optimization of access to scholarly information, but also have to rethink on their publication and archiving practices.

In the world of knowledge and scholarship-the intellectual heritage of our society, academic research plays a particularly significant role. Academic research especially doctoral research is not only considerable-both quantitatively and qualitatively, is also the foundation on which further and future research in any field is built. Doctoral research forms the underpinnings of all scientific research and also moulds the research paradigms, styles and practices of research scientists. Hence it assumes critical importance in terms of imbibing good practices. Thus it is critical that universities raise the awareness levels of students and faculty, train and offer tools and resources in support of building good research practices and facilitate building research capacities.

The debates and discussions of digital divide generally focus on the absence or inadequacy of network infrastructure. The challenges of digital information illiteracy and inadequate skills are either ignored or glossed over. One of the challenges of higher education in India is to prepare the students to be knowledge workers in the digitized networked environment optimally exploiting the vast information tools and resources. But then facilities for bridging the digital divide are not satisfactory. One of the critical issues in the 'digital bridge' exercise is that of training and imparting skills required to work in the present day networked digital environment. Information Literacy programmes is not very well developed in

our country. Thus there is a particular need to address the issue of 'information literacy' programmes in India.

Indian Doctoral Research

India with its enormous SYSTEM of higher education spanning two hundred and eighty one universities (including deemed universities) is a reservoir of extensive doctoral research in the country. Hard statistics regarding doctoral research output is not available as there is no SYSTEM/mechanism to deposit, catalogue and archive the Indian theses. Estimates of doctoral research output can only be extrapolations of available statistics. Based on such extrapolations we estimate that annually 25,000 to 30,000 doctoral theses are produced in India.

Today most doctoral students in India get their theses produced electronically, get the printout and submit the required number of copies to their respective universities. For lack of SYSTEMatic efforts-individual as well as institutional, the far versatile electronic version is generally not maintained and archived while the dumbed down version - the print version is supposedly maintained at the respective university libraries. Those hard copy versions of theses remain locked in the libraries. They are consigned to be frozen assets. Vidyanidhi project is an effort in the direction of spreading the ETD movement in India and to facilitate the creation, access, and use of Indian doctoral research.

Doctoral research- a great pedagogic journey

Doctoral research represents the beginning of a great scholarly and academic journey. It is a journey that is rigorous and also fraught with many challenges- from selecting a topic to writing the thesis. It is also a long and arduous one- involving long hours of intellectual labour. The labour and the rigours of thesis writing challenge even the most able students. It is rather unfortunate that the doctoral students are expected to complete the process without the support of adequate tutoring, mentoring, requisite guidelines, resources & tools. Students in Indian universities do not have convenient access to many of the resources and tools that would make this great journey a very enriching experience. Vidyanidhi is positioned as a portal that will help make this pedagogic journey very exciting and rich with its facilities, resources and tools.

Vidyanidhi : Towards a National Programme for ETDs in India

Vidyanidhi ("*Treasure of Knowledge*" in Sanskrit) began as a pilot project to demonstrate the feasibility of Electronic Theses and Dissertations in the Indian context. This project got underway in the year 2000 at the Department of Library and Information Science, University of Mysore, Manasagangotri, Mysore, sponsored by the National Information System for Science and Technology, Department of Scientific and Industrial Research, Ministry of Science and Technology, Government of India. Vidyanidhi, in many ways, is an attempt to implement the directives of content development outlined by the Action Plan of the National Task Force on Information Technology and Software Development, of the Government of India as far as the university theses are concerned. The policy initiatives identified in the Plan make it mandatory for all universities or deemed universities across the country to host every thesis/dissertation on a designated website. This national policy has provided a policy framework for initiating a digital library of ETDs in India.

Currently Vidyanidhi is evolving into an Information Infrastructure and portal for strengthening and augmenting the doctoral research capacities of Indian Universities.

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- The Ford Foundation
- Microsoft Corporation

The Vidyanidhi also has the strategic support from the University Grants Commission.

Vidyanidhi Project's vision is to build and strengthen the research capacities and enhance the quality of doctoral research in India and the mission is to prepare the future generation of scientists to be better equipped to harness the power of ICTs to work and play a more effective role in the creation, accessing and use of knowledge. The vision is to help usher in the E-paradigm of academic life and work culture, thereby exploiting the immense possibilities of digital libraries. Digital library technologies offer enormous advantages over traditional print world. The digital library is not just a storehouse of knowledge and information but a dynamic landscape for the creation and use of knowledge.

Premise

- Convenient and seamless access to information improves the quality of higher education and research
- The academic milieu is transiting towards e-paradigm and students and research scholars are to be able to move towards e work culture
- An enabling framework and mechanism for the above is to be in place
- Digital libraries are the bulwarks of such an enabling framework
- Universities have to develop and partner in developing digital libraries

Vidyanidhi Goals

- To evolve into an information infrastructure and enabling framework for enhancing the quality of doctoral research output
- To develop a mechanism for depositing and accessing Indian electronic theses/digital theses from anywhere, anytime.

Specific objectives of the Vidyanidhi are to-

- To evolve appropriate policy frameworks and mechanisms that would advocate and promote ETDs in India
- To sensitise, encourage and train doctoral students in India to create their doctoral research works electronically. The training programmes would help inculcate good practices in scholarly writing, e publishing, accessing and using scholarship.
- Facilitate the creation of doctoral theses in electronic form by offering tools and resources for accessing knowledge resources and creating & depositing doctoral research works. This would enable the doctoral students to adopt and follow good practices in scholarship.
- Develop tools and resources for E-learning, E-scholarly publishing and online repositories. The tools and resources include manuals, tutorials, style guides and others. This would focus on fostering the adoption of good practices.
- To increase the availability of university research to society and to preserve it electronically by procuring, collecting, archiving and disseminating doctoral research in India. This would not only enhance the visibility of Indian academic research as well as help archive the same.
- Host and maintain the Vidyanidhi Digital Libraries Portal- offering the above resources and facilities.

Vidyanidhi Strategies

The Vidyanidhi strategies revolve around- evolving a policy framework, organizational model, and implementation mechanism.

In other words our strategy is centred on the following four areas of activities -

- Policy framework (Through meetings, participation, liaison and other methods)
- Education and Training (Best research practices, Information Literacy and E-publishing)
- Content building (Full text, Metadata, and doctoral information)
- Resources and tools development (Online depositing software and interfaces, Online thesauri and others)

Our strategy is to follow a multi pronged and parallel approach for all of the above four areas of work. Further more, these areas of activities are also complementary to

one another. For example effective policy implementation and education and training facilitate and strengthen content building. Better resources and tools also help education and training as well as content building.

We are currently focusing on the four areas of activities- Developing Policy framework and advocacy; Content Building; Awareness, Education and Training, and; Resources and tools development.

Policy Framework:

A Round Table of Vice Chancellors of universities is scheduled on June 14, to deliberate on the issues/concerns relating to strengthening doctoral research in India and the possible role that ETDs can play. More specifically, the objective is to come up with a policy initiative and a modus operandi for evolving into a national collaborative SYSTEM for ETDs in India. University Grants Commission (the apex body for regulating, monitoring, facilitating, funding and coordinating Government agency for higher education in India) is involved in this effort. Dr. Arun Nigavekar, Chairman, UGC will be chairing the Round Table

Round Table Objectives

To sensitize the participants on the immense possibilities of e-theses and deliberate on the issues regarding the creation and depositing of research works at a designated Website. The main issues are-

- Address concerns- such as plagiarism, copy right and other misgivings and apprehensions
- Copy right and University research-help develop a clear cut copy right policy on university research - especially doctoral research
- Building an E-commerce model in order to eventually make the programme a self-sustaining one as well as provide cost incentive to the students and participating institutions.
- Possibility and feasibility of forming alliances with publishers for publishing of theses

Evolve an organizational mechanism for the implementation of the policy

The organisational mechanism that has been envisioned for Vidyanidhi is the 'distributed collaborative model'- where in Vidyanidhi would be the nodal agency for the repository, metadata database, policy framework, and development of tools and resources. Given the imbalances in the network infrastructure for ETDs in Indian Universities, Vidyanidhi is positioned as a repository for the participating universities, if need be.

- Solicit the participation of the institutions in the Vidyanidhi project
- Develop guidelines and frameworks for participation
- Evolve and have an MOU with the participating institutions

Strategies

- Identify and select institutions/universities which are strong in their research capacities
- The identification and selection process of institution is based on the following general criteria-
 - Doctoral research output in different disciplines of Social Sciences (Top 25 universities in each of the Social Science disciplines have been identified)
 - Publications output (Identifying the top 25 Indian academic institutions using the ISI Social Science Citation Index)
 - Willingness to participate in this collaborative endeavour
- solicit participation of these 25 universities

The final selection of 15-25 institutions (we assume that all those identified may not be forthcoming in their willingness to participate) would be based on their willingness to participate and to a certain extent regional representation and other factors

Content Building:

The Vidyanidhi Digital Library is conceived as having two layers- Metadata database and full text of theses. We are currently focusing on building both these layers. Currently we have nearly 50,000 records in the metadata database and 300 full text theses. The Vidyanidhi metadata database is a truly multilingual database with records in English and Indian Languages as well. Vidyanidhi has implemented the Unicode standard for Indian Languages and scripts.

The Vidyanidhi architecture is represented in figure 1.

Awareness, Education and Training:

As outlined above, there is an urgent need to bridge the digital divide created by digital illiteracy, by training the students and faculty in E-Publishing and E-Archiving.

Our plan is to offer three one week long training programmes either in Mysore/Bangalore/ or other cities in collaboration with other institutions.

The training programmes are envisaged at two levels/ phases of doctoral research process

- The first phase -the first year of doctoral studies-more like an orientation programme. This would also help us to build a sensitized community of doctoral students.

At this stage the objective is to sensitize and excite the doctoral students to the immense possibilities and benefits of E-theses

The course content would focus on orienting the doctoral students towards creating documents in electronic formats. Thus the course would be introductory in nature.

- The second phase would be typically in the third or fourth year of doctoral studies-at the thesis writing stage

At this stage the objective is to facilitate the doctoral students in creating their thesis in E-format by exploiting the versatility and richness of digital creation and formatting

The course content would focus on hands on and 'do it yourself' kind of tool kits

- As a first step, training modules would be prepared and made available
- Call for participation through different means
- Identify the doctoral students for training programmes
- Organise and conduct 5 day long intensive hands on training

The education and training programme would also be a kind of community building exercise, having the participants to be part of the ETD community. We plan to initiate a ETD List serv to act as a platform for exchange and communication of information, keeping track, and update each member of the group. The participants would be encouraged to subscribe to the ETD list serv and thus we plan to keep in contact continuously.

Though it would be ideal to have the second level advanced training programme as a sequel to the first, that is- restrict it only for the participants who have undergone the orientation programme, we expect that it may not be a wholly feasible approach. All students who register for doctoral programme may not complete. The 'drop out' rate among doctoral students is fairly significant. It is also possible that some students may be already familiar with the basics and may not require the orientation programme. Therefore, we feel that it cannot be restrictive and be made conditional. A pragmatic approach would be to strive towards the ideal but have a flexible policy. We plan to have the two kinds of training independent of each other, but attempt to make it a follow up as far as possible.

Accessing and searching the Vidyanidhi Database

Currently the Vidyanidhi website and the search interfaces are in English (Indic Language web pages are in the pipeline). However searching is facilitated in English as well as Indic Languages. There are two possible ways of searching the Vidyanidhi database. One can search the integrated database that has all the records irrespective of language/script or the respective vernacular database having records of theses in that language only. The difference between the two approaches is -one affords search in the English language and the other in the vernacular. The first approach also provides for viewing records in

Roman script for all theses-search output- that satisfy the conditions of the query and also an option for viewing records in vernacular script for theses in vernacular. The second approach- enables one to search only the vernacular database and thus is limited to records in that language. However, this approach enables the search to be in the vernacular language and script.

Access to and the search interaction in the Vidyanidhi Database is facilitated in the following manner: When one gets to the Metadata Database one can choose to search by language, either -

- All
- Hindi
- Kannada

While the 'All' option facilitates the searching of the integrated database, the other two- Hindi and Kannada limits the access and search to only the respective languages. We will illustrate the search process with the following example-

- Select all
- Select the field -
 - Author
 - Keyword
 - Title
 - University
 - Subject
 - Guide
 - Language
 - Year

Further narrowing of the search is also provided- where in one can combine any two fields. Once the database is queried using any of the above conditions, then the search results indicates the number of records output under - All, Hindi, Kannada. The searchers will have the option to click on their choice and view records in either Roman script only or Roman as well as respective scripts.

Vidyanidhi Promotional Activities

Vidyanidhi is following a multi pronged approach toward the realization of its mission and objectives. We are advocating, liaising, promoting the concept of ETD within the Indian academic milieu. We are following in parallel the top down as well as bottom up approach. We have involved the apex body for higher education - UGC to promote the ETD through its regulatory arm, the heads of academic institutions to implement the policy frameworks and also targeting the Students to sensitize and enthuse them. The promotional flyers and brochures targeting all the three segments are being readied.

Conclusion:

Vidyanidhi is envisioned as a national effort to support and promote the concept of ETDs and develop into an enabling framework- policy as well operational, for the full realization of the potential of digital libraries for building research capacities in academic institutions in India. It is evolving into a collaborative, federated information infrastructure for depositing, archiving and disseminating doctoral research works in India.

Vidyanidhi Architecture

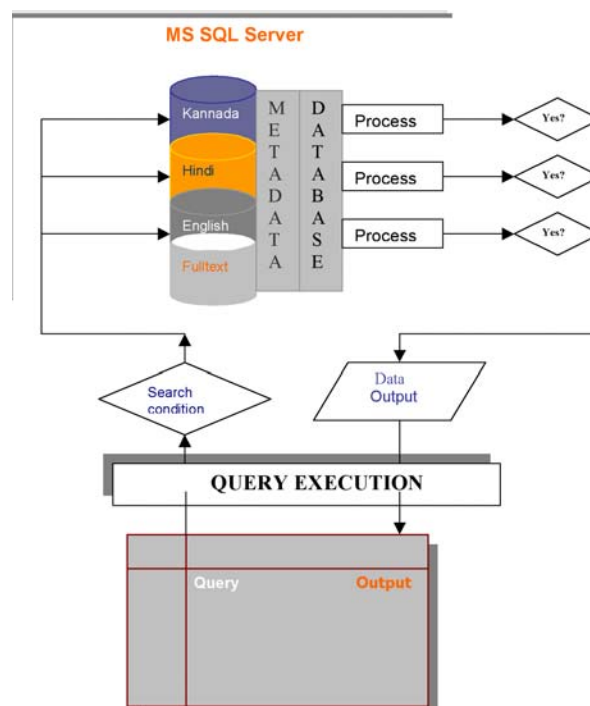


Figure 1. Architecture of Vidyanidhi